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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,156	03/08/2007	Domenico Romiti	9526-91 (189371)	2908
30448	7590	05/09/2012	EXAMINER	
AKERMAN SENTERFITT P.O. BOX 3188 WEST PALM BEACH, FL 33402-3188			LEO, LEONARD R	
			ART UNIT	PAPER NUMBER
			3785	
			NOTIFICATION DATE	DELIVERY MODE
			05/09/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@akerman.com

Office Action Summary	Application No. 10/596,156	Applicant(s) ROMITI, DOMENICO	
	Examiner LEONARD R. LEO	Art Unit 3785	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2012.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 1, 2012 has been entered.

Claims 1-6 and 8-12 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfi et al in view of Nagano.

Gandolfi et al (title) discloses a tube bundle heat exchanger for treating corrosive fluids comprising at least one tube composed of titanium (Figure 3, page 18, first paragraph and page 23, lines 18-24), but does not disclose a hot-drawn or welded layer of zirconium.

Nagano (abstract) discloses a protective coating for titanium comprising zirconium for the purpose of preventing corrosion.

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Since Gandolfi et al and Nagano are both from the same field of endeavor and/or analogous art, the purpose disclosed by Nagano would have been recognized in the pertinent art of Gandolfi et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Gandolfi et al a zirconium coating on the titanium tubes for the purpose of preventing corrosion as recognized by Nagano.

To hot-draw or weld the layer of zirconium as taught by Nagano onto the titanium tube of Gandolfi et al is considered to be an obvious design choice, producing no new and/or unexpected results. Furthermore, it would have been obvious to one of ordinary skill in the art to use a known technique to improve similar devices in the same way. *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) As disclosed in the specification (page 6 and 12), applicant states the specific bonding above is a preference and sets forth no criticality in bonding zirconium to titanium.

Regarding claim 2, it would have been obvious to one of ordinary skill in the art to employ the zirconium material on either the inside or outside of the titanium tube depending on which surface requires corrosion protection with respect to the intended working fluids. Furthermore, it would have been obvious to one of ordinary skill in the art to try - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007). In this instance, the zirconium material can be located in one of two possibilities: the outside or the inside of the titanium tube.

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Regarding claim 3, the specific titanium tube and zirconium material thicknesses are considered to be an obvious design choice, producing no new and/or unexpected results. One of ordinary skill in the art would employ any desired tube and coating material thicknesses to achieve a desired heat exchange, pressure resistance, wear ability, etc. Furthermore, Gandolfi et al (page 18) discloses tube thickness ranging from 1 to 20 mm depending on the tube material, and coating material ranging from 0.5 to 3 mm depending on the tube material.

Regarding claims 4-6, Gandolfi et al (page 8, lines 4-22) discloses a portion of the tubes may be corrosion protected where the working or process fluid is at its maximum aggressiveness. One of ordinary skill in the art would employ any portion of the tube with the protective layer to achieve a desired amount of corrosion resistance.

Regarding claims 9-10, Gandolfi et al (Figure 3, page 24, lines 2-6) discloses a carbon or stainless steel tube plate 22 with a titanium layer 23. The specific titanium layer thickness is considered to be an obvious design choice, producing no new and/or unexpected results. One of ordinary skill in the art would employ any desired layer thickness to achieve a desired corrosion resistance, wear ability, etc.

Regarding claims 11-12, the recitations of “for the decomposition of ammonium carbamate in an urea production plant” and “for the condensation of ammonia and carbon dioxide into ammonium carbamate in an urea production plant” are considered to be statements of intended use, even if claimed, does not merit patentable weight unless the body of the claim refers back to, is defined by, or otherwise draws life and breadth from such intended use. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

The Examiner disagrees with applicant's remarks (page 5, last paragraph), as discussed below. Applicant's remarks (page 6, second paragraph) are incorrectly based on the embodiment of Figure 2 of Gandolfi et al. The basis of the grounds of rejection in view of Gandolfi et al and Nagano relies on the fact that the primary reference of "Gandolfi et al (title) discloses a tube bundle heat exchanger for treating corrosive fluids comprising at least one tube 4 composed of titanium (Figure 3, page 18, first paragraph and page 23, lines 18-24)." Figure 3 and the former citation (reproduced below) clearly disclose a single wall tube 4 consisting of only one material, i.e. titanium, zirconium or an alloy.

According to the present invention, the inner wall of each tube consists of a material highly resistant to corrosion, selected from titanium, zirconium or an alloy of one of them possibly comprising other metals. In a first embodiment, each tube consists entirely of one of said materials, preferably zirconium, and has a thickness ranging from 2 to 15 mm, preferably from 3 to 10 mm.

The Examiner agrees that Figure 3 (page 36, line 34 to page 37, line 6) explicitly discloses a single wall tube 4 composed of zirconium. However, this disclosure is a *preferred* embodiment (emphasis added). This preference is also explicitly stated in the citation above.

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However, this does not detract from the alternative disclosure and teaching of a titanium tube.

Applicant acknowledges this fact (bottom of page 6 to top of page 7). There is no explicit disclosure in Gandolfi et al that suggests a combination of titanium and zirconium cannot be made. Further, there is no express teaching against a combination of titanium and zirconium. The Examiner reminds applicants the rejection is based on a combination of references. As discussed below, the secondary reference of Nagano teaches the combination of titanium and zirconium.

However, the Examiner admits Gandolfi et al does not disclose a hot-drawn or welded layer of zirconium. Applicants do not traverse the fact that Nagano teaches employing a titanium tube coated with zirconium. Applicant incorrectly alleges that one of ordinary skill in the art of Gandolfi et al would not employ and appreciate the teachings of Nagano et al as evidenced below (Gandolfi, bottom of page 2 to top of page 3).

The problem of corrosion has been faced with various solutions in existing industrial plants, and others have been proposed in literature. There are in fact numerous metals and alloys capable of resisting for sufficiently long periods the extremely aggressive conditions which are created inside a synthesis reactor of urea or other apparatuses in processes involving highly corrosive fluids, such as in the synthesis of nitric acid, for example. Among these, lead, titanium, zirco-

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Gandolfi et al discloses highly corrosive fluids are present in the synthesis of urea **and** nitric acid. Nagano et al (abstract) clearly discloses protecting titanium against corrosion in a nitric acid environment by coating titanium with zirconium. Employing zirconium inside the titanium tube of Gandolfi et al is obvious, since the corrosive agent flows inside the tube of Gandolfi et al.

As stated in the previous and instant Office actions, “To hot-draw or weld the layer of zirconium as taught by Nagano onto the titanium tube of Gandolfi et al is considered to be an obvious design choice, producing no new and/or unexpected results. Furthermore, it would have been obvious to one of ordinary skill in the art to use a known technique to improve similar devices in the same way. *KSR Int’l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) As disclosed in the specification (page 6 and 12), applicant states the specific bonding above is a preference and sets forth no criticality in bonding zirconium to titanium.” The burden is upon applicant to show nonobviousness. As noted, applicant does not disclose any art recognized problems or difficulties in bonding the zirconium to the titanium, and the Examiner believes one of ordinary skill in the art of metal bonding would be capable of bonding the two dissimilar metals.

In summary, the device of the combination of Gandolfi et al and Nagano structurally meets the instant invention. In the final product of Gandolfi et al and Nagano, there is no structural difference between the device of the combination and the “hot-drawn or welded” zirconium and titanium bond of the instant invention.

Conclusion

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ Leonard R. Leo /
PRIMARY EXAMINER
ART UNIT 3785

May 6, 2012